



Clean School Bus USA

**EPA's New Initiative to Reduce
Pollution from School Buses**

The Goal



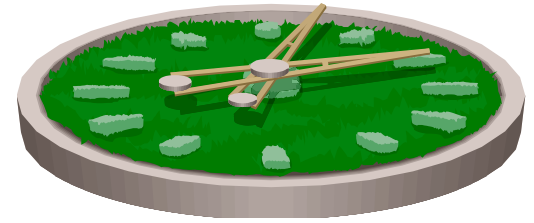
- Provide the cleanest possible transportation for this generation of school children
 - Reduce school bus idling
 - Retrofit buses with modern pollution control technology
 - Replace the oldest buses
- Most of the nation's 450,000 school buses run on diesel
 - One-third were built before 1990 - should be replaced
 - Two-thirds can reduce emissions with clean technology and fuels

Why Focus on School Buses?



- Diesel exhaust contains hazardous pollutants
- Children are especially sensitive to air pollution because they breathe at a faster rate than adults
- 24 million children ride bus to school every day
- School buses last a long time
- There are steps we can take now that will lead to cleaner school buses

Why Now?



- Emission standards taking effect in 2007 only apply to new engines
- Cost-effective technologies to upgrade existing buses are widely available today
- School bus fleet turnover rates are slow
- Without special action, today's kindergartners will be in college before benefits of new standards are fully realized

Clean School Bus USA:

Tomorrow's Buses for Today's Children



- Launched in April, 2003
- A partnership of private and public sector leaders working together to deliver resources and know-how to school districts
- Attracting wide interest
- Congress set aside \$5 million in 2003 for grants to school districts

School Bus Facts



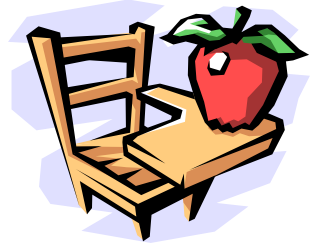
- School buses are by far the safest way for children to get to school
- School buses typically idle more than an hour per day
- Children spend between 20 minutes and several hours per day on the bus
- Older school buses can pollute up to six times more than clean technology buses

Facts about Idling



- Buses tend to idle near where kids congregate creating a situation where high exposures are possible
- In addition to creating air pollution, idling buses are noisy and smelly
- Reduced idling can save lots of money – buses consume at least a half gallon fuel for each hour they idle

The Three R's



- **Reduce Idling**
 - Smart, easy, and immediate way to reduce pollution
 - Saves fuel and money
- **Retrofit**
 - Can achieve significant reductions in particulate matter emissions (as much as 90%)
- **Replace**
 - Buses meeting EPA's 2007 emission standards will emit 90% less particulate matter
 - Replacing old buses delivers important safety as well as health benefits

Reduce Idling

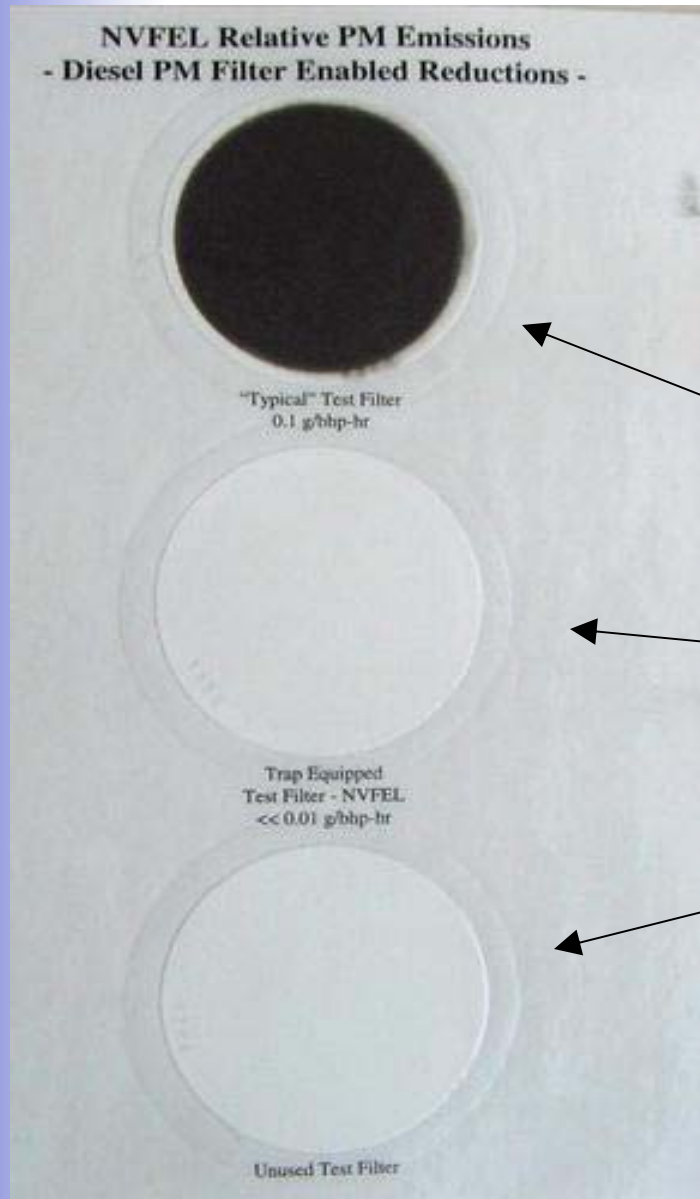


- Establish anti-idling policies
- Do not start buses prior to departure
- Power flashing lights with the battery, not the engine
- In cold weather, warm the engine using block heaters and provide a room inside the school where drivers can wait
- A fleet of 50 school buses can save \$2,250 per school year by reducing idling of each bus 30 minutes per day

Retrofit Options

Clean Fuel/Clean Technology	% Reduction in Particulate Matter	Approximate Cost
Ultra-Low Sulfur Diesel (ULSD)	5-10%	5-20 cents more per gallon than diesel
Particulate Matter Filter (must be used with ULSD)	60-90%	\$5,000-\$8,000
Oxidation Catalyst	20-30%	\$700-\$2,000
Biodiesel (B20 - 20% blend)	10% (increases nitrogen oxides 1-2%)	15-20 cents more per gallon than diesel
Emulsified Diesel	50% (also reduces nitrogen oxides 10%)	20-40 cents more per gallon than diesel

NVFEL Relative PM Emissions
- Diesel PM Filter Enabled Reductions -



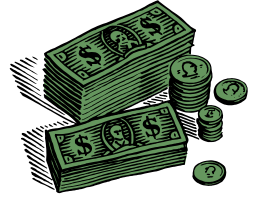
Testing Particulate Matter Emissions

- Typical diesel engine on the road today
- Engines using a Particulate Matter Filter
- Clean (unused) test filter

Replacement Options

- Both diesel and compressed natural gas (CNG) offer very low emissions
 - School bus engines are subject to tough new emission standards taking effect in 2007
 - New buses can take advantage of 2007 technology now
 - Same standards will apply to both diesel and CNG
- Diesel
 - Need PM filter and ULSD for lowest emissions
 - ULSD available everywhere starting in 2006
- CNG
 - Fueling infrastructure expensive but CNG may be practical where infrastructure already exists or funding available
 - A new CNG school bus costs about \$35,000 more than an equivalent diesel bus

Federal Funding Available for Clean School Buses



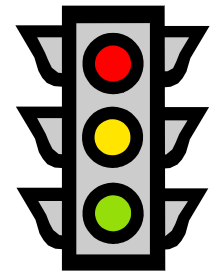
- \$5 million in EPA's budget for 2003
 - EPA awarded 17 grants that will demonstrate a variety of technologies & fuel options in small & large, urban & rural districts across the country
- \$20 million from a Clean Air Act settlement with Toyota Motor Corporation
 - For more information visit:
www.epa.gov/otaq/retrofit

Projects



- There are currently about 40 school bus projects in place nationwide
- More than 50 organizations have expressed interest in joining the CSB partnership
 - Corporations include 3M Corporation, Corning, Inc, BP, Philips, Scholastic, Inc
- More than 120 school districts have expressed an interest in Clean School Bus USA projects

Clean School Bus USA: Something for Everyone



- Idling programs don't cost money, they save money
- The best choice for retrofit and replacement depends on the individual fleet
 - Fuel availability
 - Resource availability
 - Fleet activity characteristics
- Some options are not expensive
- Teachers, principals, superintendents, students, bus drivers, transportation providers, and many others can all contribute
- Through education and action we can all make a difference

What You Can Do to Help



- School Officials can:
 - Establish anti-idling policies and post no-idling signs
 - Provide a space inside where drivers can wait
- Bus Drivers can:
 - Turn off the school bus engine when waiting for students
 - Go inside the school on cold days when they arrive early
 - Avoid driving directly behind other large vehicles including school buses if they see visible smoke being emitted
- Parents can:
 - Encourage school officials to adopt anti-idling policies
 - Not idle their own personal vehicles

For more information...



- www.epa.gov/cleanschoolbus
- www.epa.gov/otaq/retrofit